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GEOGRAPHICAL PUBLICATIONS

(Reviews and Titles of Books, Papers, and Maps)

For key to classification see "Explanatory Note" in Vol. II, pp. 77-81

NORTH AMERICA

GENERAL

LAUT, A. C. **The conquest of the Great Northwest, being the story of the Adventurers of England known as The Hudson's Bay Company: New pages in the history of the Canadian North-west and Western States.** 2 vols. in one. Vol. 1, xxi and 409 pp.; maps, ill.; Vol 2, vii and 415 pp. Moffat, Yard & Co., New York, 1914. \$2.00. 8½ x 6.

Part I, 93 pp. (1610-1631), deals with the four voyages of Henry Hudson and the adventures of Jens Munck and other Danes in Hudson Bay. The material is derived from original sources and is presented in a concise way. (The map facing page 22 in Vol. 1 needs revision with reference to the flow of the Polar Currents. The author's comparison between Dr. Nansen and Hudson and the description of driftwood and currents will not stand analysis.) Part II and the first portion of Part III, pp. 97 to 409 (1662-1760), treats of the explorations of Radisson in company with Groseillers and the first voyage of the fur hunters, which, under the leadership of Radisson, promptly brought into existence a company of gentlemen adventurers trading to Hudson Bay. These adventurers immediately proved astoundingly successful and secured a charter from King Charles II to form the Hudson's Bay Company. This was the most remarkable charter ever issued, since it deeded practically all of modern Canada, including the great Northwest and all of the United States west of the Mississippi River. "The purest piece of feudalism ever perpetrated on America . . . depending upon the idea that the earth was the Stuart's, to be disposed of at will."

Next came the French raiders, under the leadership of d'Iberville, a leader at once wily and resourceful, secretly backed with the power of the French King. The exploits of Radisson and d'Iberville deeply involved the diplomacy of the English and French courts with plot and counter-plot. General histories covering this period omit the very material necessary for the full rehearsal of those important events. This material is supplied in the present work and is a sufficient reason why this volume should find a prominent place in libraries of history as well as of exploration. It is densely packed with data from original sources, with full references.

The times were troublous. More than one naval engagement was fought in Hudson Bay. Forts were captured, sacked, demolished; recaptured, rebuilt, resacked; only to pass again through the same stirring cycle of changes. As the sable, under Yermak, gave vast Siberia to Russia, so the beaver, in the hands of the Hudson's Bay Company, gave vast leagues of Canada to Great Britain.

Volume 2, consisting of Part III concluded and Part IV (1810-1870), deals with the real conquest of the Great Northwest—its exploration and beginnings of settlement. Indeed, so thoroughly did runners, guides, trappers, and special explorers overrun this entire territory, that not a stream where a beaver could float a stick, not a pond where he could build a house was overlooked. It is within the bounds of probability that every portion of the Great Northwest, including the northern tier of the United States west of the Mississippi, British Columbia, Saskatchewan, and the vast mountain ranges to the Arctic Ocean was known to agents resident oftentimes for long intervals at the several forts which were scattered through the territory. The country was surely well known to the trappers; nothing was left virgin for modern explorers.

This period of exploration and conquest was not confined to the present bounds of Canada, but covered Wisconsin, North Dakota, Montana, Idaho, Wyoming, Nevada, Utah, Washington, Oregon, and California. The stories of events within this long period are not so much a history of the times as they are the biographies of such intrepid leaders as Mackenzie, MacTavish, Thompson, Frazer, Astor, McGillivray, MacDonald, Robertson, Selkirk, Simpson, and Lord Strathcona. In a broader sense the entire story of the discoveries, the explorations, and the subjugations is but the summary of the biographies of Hudson, Radisson, d'Iberville, Selkirk, and Strathcona. The work has much to commend it, especially the many pages of notes, and the fact that "tons of Hudson's Bay records were examined as original data for the compilation of the book."

W. S. C. RUSSELL

SWANTON, J. R., AND R. B. DIXON. **Primitive American history.** Reprinted from *Amer. Anthropologist*, Vol. 16, 1914, No. 3, pp. 376-412.

A critical examination of the migration history of the various tribes north of Mexico, based on native tradition and the earliest historical record. The conservative treatment of the authors lends great weight to their final conclusions, which merit quotation at length: "The tribes of several of our stocks may be referred back to a swarming ground, usually of rather indefinite size but none the less roughly indicated. That for the Muskogean, including probably some of the smaller southern stocks, must be placed in Louisiana, Arkansas, and perhaps the western parts of Mississippi and Tennessee, although a few tribes seem to have come from the region of the Ohio. That for the Iroquoians would be along the Ohio and perhaps farther west, and that of the Siouans on the lower Ohio and the country to the north, including part at least of Wisconsin. The dispersion area for the Algonquians was farther north about the Great Lakes and perhaps also the St. Lawrence, and that for the Eskimo about Hudson Bay or between it and the Mackenzie River. The Caddoan peoples seem to have been on the southern plains from earliest times. On the North Pacific coast we have indications that the flow of population has been from the interior to the coast. This seems certain in the case of the Indians of the Chimmesyan stock and some Tlingit subdivisions. Some Tlingit clans, however, have moved from the neighborhood of the Nass northward. Looking farther south we find evidence that the coast Salish have moved from the inner side of the coast ranges, while a small branch has subsequently passed northward to the west of it. The Athapascan stock in all probability has moved southward, sending one arm down the Pacific coast and a larger body presumably through the Plains, which reached as far as northern Mexico. Most of the stocks of the Great Plateau and of Oregon and California show little evidence of movement, such indications as are present, however, pointing toward the south as a rule. The Pueblo Indians appear to have had a mixed origin, part of them coming from the north, part from the south. In general there is to be noted a striking contrast between the comparatively settled condition of those tribes west of the Rocky Mountains and the numerous movements, particularly in later times, of those to the east."

DOUGLAS, W. B., edit. **General Thomas James' three years among the Indians and Mexicans.** 316 pp.; map, ills., bibliogr., index. Missouri Historical Society, St. Louis, 1916. \$4.50. 9 x 6½.

KROEBER, A. L. **Tribes of the Pacific coast of North America.** *Proc. 2nd Pan American Sci. Congress, Dec. 27, 1915, to Jan. 8, 1916*, Vol. 1, Section 1: Anthropology, pp. 22-37. Washington, D. C., 1917.

UNITED STATES

North Atlantic States

GOLDTHWAIT, J. W. **Evidence for and against the former existence of local glaciers in Vermont.** Maps, ills. *Repts. of the State Geologist on the Mineral Industries and Geol. of Vermont*, Vol. 10, 1915-1916, pp. 42-73. Burlington, 1916. [It is the author's opinion that local alpine glaciers have never existed in the Green Mountains. The supposed evidences, striae, "terminal moraines," etc., previously brought forward are to be explained by the ordinary operations of the continental ice sheet. Moreover cirques and other signs of local ice action are wanting from the higher summits where they would naturally be found had climatic conditions ever proved suitable. But the climate at the close of the glacial period in Vermont appears to have been too mild for the development of local snow fields and alpine glaciers. In the light the study throws upon the climatic conditions of the period the problem has more than a local interest.]

HATCH, LAURA. **Marine terraces in southeastern Connecticut.** Diags., ills. *Amer. Journ. of Sci.*, No. 262, Vol. 44, 1917, pp. 319-330.

JEVETT, A. L. **Official publications of the state of New York relating to its history as colony and state.** 62 pp.; bibliogr., index. *New York State Library Bibliogr. Bull.* 59 (= *Univ. of the State of New York Bull.* No. 635). Albany, 1917.

JOHNSON, E. R. **The economic causes of New York's supremacy.** 3 ills. *New York Evening Post: Greater Port of New York Suppl.*, June 20, 1917, pp. 2-4. [Abstracted in the August, 1917, *Review*, Vol. 4, p. 145.]

KEIR, MALCOLM. **Some responses to environment in Massachusetts.** Maps, diags., ills. *Bull. Geogr. Soc. of Philadelphia*, Vol. 15, 1917, No. 3, pp. 121-138; No. 4, pp. 167-185.

MILLER, W. J. **The Adirondack Mountains.** 97 pp.; maps, diags., ills., bibliogr.,

index. *New York State Museum Bull. No. 193*. Albany, 1917. ["The purpose of this book is to present in simple, nontechnical language a general outline of the geography, rock formations, physical history, and human history of the region." Sources for further study are suggested in the bibliography. Illustrations include small sketch maps and diagrams and many photographs: there is a location map and a generalized topographic map.]

OSTRANDER, J. E. **A summary of meteorological records for twenty-five years—1889 to 1913, inclusive.** *Massachusetts Agric. Experiment Station Bull. No. 153*, pp. 121-146. Amherst, 1914.

PARKINS, A. E. **The development of transportation in Pennsylvania.** Maps, ills., bibliogr. *Bull. Geogr. Soc. of Philadelphia*, Vol. 14, 1916, No. 3, pp. 92-114; No. 4, pp. 148-168; Vol. 15, 1917, No. 1, pp. 1-18.

PETERSON, A. E., AND G. W. EDWARDS. **New York as an eighteenth century municipality.** xxvii and 459 pp.; map, ills., index. (Studies in History, Economics and Public Law, Faculty of Political Science, Columbia University.) Longmans, Green & Co., New York, 1917. \$5.00. 9 x 6. [In 1905 the minutes of the Common Council of New York for the pre-Revolutionary period were made available by printing and indexing. They form the indispensable source for this study, in which the geographer will find much interesting material, chiefly in the sections relating to trade and industry and transportation (growth of the municipal ferry system).]

— **Pittsburgh, Pennsylvania, Report of Flood Commission of.** xv and 452 pp.; maps, diagrs., ills., bibliogr., index. Flood Commission of Pittsburgh, 1912. \$10. 10½ x 8.

RICH, J. L. **An instance of the changing value of geographical location.** *Journ. of Geogr.*, Vol. 15, 1916-17, No. 6, pp. 185-189. [Hobart topographic sheet, at the head of Delaware River.]

RODDY, H. J. **Physical and industrial geography of Lancaster County, Pennsylvania.** vi and 113 pp.; maps, diagrs., ills. New Era Printing Co., Lancaster, Pa., 1916. 75 cents. 9½ x 6.

SARTORIS, ANTONIO. **Fra gli italiani emigrati nella Pennsylvania.** *Italiana Gens*, Vol. 6, 1915, No. 3-6, pp. 132-135. Turin.

SEYMOUR, E. G. **New York City and the development of trade: A reading list.** 39 pp.; ill. Public Library, New York, 1914. 7 x 5. [Works of history and fiction illustrating the growth of the city from the discovery to the present day.]

SPILLMAN, W. J., H. M. DIXON, AND G. A. BILLINGS. **Farm management practice of Chester County, Pa.** 99 pp.; maps, diagrs., ills., index. *U. S. Dept. of Agric. Bull. No. 341*. Washington, D. C., 1916. [A tabulation and interpretation of data obtained from survey of operations of over 600 farms which should prove valuable in detailed regional study.]

TUCKER, F. B. **New York's military map of the year 1778.** Map. *Engineering News*, Vol. 75, 1916, No. 25, p. 1172.

UNDERHILL, R. M. **Ancient Long Island.** *Survey*, Vol. 35, 1915, Dec. 11, pp. 291-293. [Effects of long isolation are to be seen in the remote—or but recently remote—shore villages of Nassau County, Long Island. Manner of life is primitive; old traditions are preserved; the stranger is an object of suspicion; inbreeding, by intensifying defects, has produced a high percentage of feeble-mindedness.]

WERNER, C. J. **A history and description of the manufacture and mining of salt in New York State.** 144 pp.; map, ills. Publ. by the Author, Huntington, Long Island, 1917. \$15.00. 9 x 6.

MEXICO AND CENTRAL AMERICA

GARCÍA, GENARO, edit. **The true history of the conquest of New Spain, by Bernal Díaz del Castillo, one of its conquerors.** Translated into English, with introduction and notes, by A. P. Maudslay. Maps, ills., bibliogr., indexes. Vol. 1, lxxv and 396 pp.; Vol. 2, xvi and 343 pp.; Vol. 3, 38 pp. (with maps and plans); Vol. 4, xiv and 395 pp.; Vol. 5, xv and 463 pp. (*Hakluyt Soc. Publs.*, 2nd Series, Vols. 23-25, 30, and 40.) The Hakluyt Soc., London, 1916. 9 x 6 each.

Bernal Díaz del Castillo was connected with the exploration and conquest of Mexico from beginning to end. He was with Córdoba and Grijalva on their voyages along the coast of Yucatan. He served throughout the campaign against the Mexican empire and accompanied Cortes on the terrible expedition to Honduras. For fifty years he took part in the subjugation of the land. *Encomiendas* were granted him, first in Coatzacoalcos,

later in the *audiencia* of Guatemala. He attended the congress of Valladolid in 1550, and, unmoved by the humanitarian pleadings of Las Casas, voted that the *encomiendas* should be assigned to the conquistadores in perpetuity. Few of the stirring events of the conquest were unknown to this sturdy pioneer. Herein lies the value of his work.

A soldier rather than a scholar, Díaz del Castillo had not attempted to record his adventures until long after the conquest had been completed. Then he found it difficult to recall many details of the story. In spite of that his account has become one of the most important records of that heroic period. Antonio de León Pinelo and Enrique de Vedia, in their bibliographies, speak highly of his work. Herrera and Torquemada quote him frequently. Robertson depended upon his descriptions, and Prescott ranked his work as next in importance to Gomara's, while the Mexican historians, Genaro García, Vicente Riva Palacio, and Alfredo Chavero consider his account an indispensable contribution to our knowledge of early Mexican history. At least twenty editions of Díaz del Castillo's history have been published, in six different languages.

This is not the first English translation of the work. But Keatinge in 1800 and Lockhart in 1844 based their translations upon the text published by Friar Alonzo de Remón (Madrid, 1632), and that edition differed greatly from the original. The manuscript was preserved in Guatemala, and in 1904 Genaro García, having compared a written and a photographic copy of it, published the history in Mexico. Maudslay's work is a translation of that carefully prepared edition. The Spanish chroniclers were far from accurate at best, and as their accounts are the only source of information regarding those great voyages of discovery and conquest it is well worth while to preserve them exactly as written. This new translation is amply justified.

The first four volumes of Díaz del Castillo's history tell of the conquest of Mexico, including the early explorations of the coast of Yucatan and Tabasco. Volume 3 is devoted exclusively to maps. It contains the very interesting pre-Columbian plan of a part of Mexico City, made on maguey paper, with names of canals and causeways added in Spanish, probably soon after the conquest. A part of the fifth volume describes the remarkable expedition made by Cortes from Mexico to Guatemala and Honduras (1524-1526), in which he led an army of Spaniards and Indians over marshes, across rivers, and through dense forests in territory that even today can boast of few trails over which a horse can travel and must receive its mail and supplies by boat or by carriers on foot. For purposes of comparison a translation of Cortes' Fifth Letter to the Emperor describing this expedition is included in the volume; and the translator, having traveled over the region himself, charts the route probably followed by the conquistadores.

The country through which the Spaniards passed showed no signs of the higher Maya civilization. No well-built cities were encountered nor were any mentioned by the Indians along the way. The route followed must have been just beyond the frontier of Maya influence at that time. In Tabasco the natives lived in settlements beside streams or lakes, traveling only by watercourses. They were more helpless than the Spaniards when trying to cross the interfluvial spaces. Farther south among the mountains of Guatemala a somewhat higher culture was found. The people cultivated extensive fields of maize, kept poultry (probably turkeys), and possessed cacao plantations. They carried on extensive commerce between their principal towns, along well-established routes of trade by land as well as on streams. The traders mentioned by Cortes and Díaz del Castillo may have been the traveling merchants (*pochteca*), who often journeyed far from their guild towns on the Anahuac plateau, serving as pioneers for Mexican political expansion. Apparently they did not come from Yucatan. Maudslay concludes that the Maya civilization whose ruins are found in the region traversed by Cortes had declined long before this time. This accords with ideas advanced by Morley, who, from his recent studies of Maya hieroglyphs, estimates that the cities in the south had been abandoned about the end of the sixth century.

Mr. Maudslay has not acted simply as translator of this history, but has added notes on the geography and archeology of Mexico, which with the maps that accompany the work greatly enhance its value.

BARBERENA, S. I. *Informe de los servicios meteorológico y sismológico de El Salvador. Proc. 2nd Pan American Sci. Congress, Dec. 27, 1915, to Jan. 8, 1916*, Vol. 2, Section 2: Astronomy, Meteorology, and Seismology, pp. 642-644. Washington, D. C., 1917.

— [Canal Zone] *weather conditions for the year, 1917. Panama Canal Record*, Vol. 11, 1918, No. 23, p. 246.

G[ORDON], G. B. *The trail of the Golden Dragon. [Univ. of Pennsylvania] Museum Journ.*, Vol. 9, 1918, No. 1, pp. 29-38. [Relationship between myth and environment in Central America.]

HUNTINGTON, ELLSWORTH. **Maya civilization and climatic changes.** *Diagr. Proc. Nineteenth Internatl. Congress of Americanists held at Washington, Dec. 27-31, 1915*, pp. 150-164. [Smithsonian Institution], Washington, D. C., 1917.

LANDA, LUIS. **Estado actual de la meteorología y sismología en Honduras.** *Proc. 2nd Pan American Sci. Congress, Dec. 27, 1915, to Jan. 8, 1916*, Vol. 2, Section 2: *Astronomy, Meteorology, and Seismology*, pp. 727-730. Washington, D. C., 1917.

LÓPEZ, ELPIDIO. **Estudio sobre los estados del tiempo que corresponden a cada uno de los tipos de carta (primera aproximación) y para algunas regiones de la República Mexicana.** *Maps. Bol. Mensual del Observatorio Meteorol. y Seismol. Central de México*, 1916, No. 10, pp. 207-212. Sec. de Fomento, Colonización, e Industria, Mexico. [From a study of available records—very incomplete for certain sections—Mexican weather has been resolved into ten types. Each of these is represented graphically and is briefly discussed.]

LÓPEZ, ELPIDIO. **Influencia de los ciclones tropicales sobre el estado del tiempo en el Valle de México.** *Map. Bol. Mensual del Observatorio Meteorol. y Seismol. Central de México*, 1916, No. 10, pp. 203-206. Sec. de Fomento, Colonización, e Industria, Mexico. [From time to time extraordinary rainfalls have been recorded in Mexico City: in Sept., 1915, for instance, 3½ inches of rain fell in four hours. These are hurricane rains developing in the rear quadrant of the violent tropical cyclone. In the above article meteorological conditions during eight such storms are shown in tabular form, the paths of the storms being indicated on a map.]

MEANS, P. A. **History of the Spanish conquest of Yucatan and of the Itzas.** *Maps, ills., bibliogr. Papers of the Peabody Museum of Amer. Archaeol. and Ethnol., Harvard University*, Vol. 7, 1917, pp. 1-206.

— **Mexico: General descriptive data.** 47 pp.; maps, ills. Pan American Union, Washington, D. C., 1916.

— **Mexico's petroleum industry.** *Ills. Mexican Rev.*, Vol. 2, 1917, No. 1, pp. 4-7, 10-11, and 13.

MORLEY, S. G. **The rise and fall of the Maya civilization in the light of the monuments and the native chronicles.** *Maps, ills. Proc. 2nd Pan American Sci. Congress, Dec. 27, 1915, to Jan. 8, 1916*, Vol. 1, Section 1: *Anthropology*, pp. 192-208. Washington, D. C., 1917. [A series of eight maps shows the distribution of Maya civilization at the chief stages of its development. Hieroglyphic inscriptions provide a chronology for the Old Empire that flourished during the first six centuries of the Christian era in what now are the states of Chiapas and Tabasco in Mexico, the departments of Peten and Izabal in Guatemala and the adjoining western part of Honduras. The Old Empire terminated about 600 A. D. in a rapid decline of which the causes have been variously conjectured. Two conjectures have a special geographical significance. Cook has suggested exhaustion of the soil following primitive exploitation; Huntington, increased rainfall with stimulated growth of the natural vegetation to a degree against which Maya agriculture could not contend. A migratory movement northward during the last period of the Old Empire made the first stage of the cultural florescence in Yucatan; a renaissance of Maya civilization reached its apogee in the eleventh century. Sources for the history of the New Empire exist in the native chronicles.]

EUROPE

BALKAN STATES, INCLUDING RUMANIA

— **Albania, Relazione della Commissione per lo studio dell'. Part I: Studi geologici**, by Giorgio Dal Piaz and Antonio De Toni; **Studi geografici**, by Roberto Almagià. 81 pp.; maps, diagrs., ills. **Part II: Studi agrologici**, by Umberto Rosati and Gaetano Baudin. 195 pp.; diagrs., ills. Società Italiana per il Progresso delle Scienze, Rome, 1915. Both vols. 5s. 3d. 11 x 7½.

To judge from the data gathered in these two volumes of the Italian Association for the Advancement of Science, a notable forward stride has been made in our knowledge of Albania in the course of the last decade. The country has not recovered from the devastating effects of Turkish misrule, and the backward state of its inhabitants is apparent when their social organization is compared with that of their neighbors. Yet the different reports forming the text of the present work indicate the existence of an economic foundation on which the building of a thriving Albanian state is possible.

Of particular interest is Professor Almagià's account of the geographical features which have conferred historical importance on Albanian harbors. The likelihood of a revival of commercial activity to be directed along the routes which formerly extended cross-country in an east-west direction is intimated. This is a favorite Italian concep-

tion. It needs, however, the test of application to prove whether ancient trade routes like the Via Egnatia will be able to compete with the better frequented north-and-south avenues of Balkan trade.

The authors believe in the possibility of promising developments in agriculture and call attention to results already attained in the vicinity of Valona by their countrymen as well as by Greek operators. The need of proper instruction in industrial methods of operation or exploitation is apparently most pressing. To offset this condition the authors suggest inviting Albanians to Italian institutions and the building of agricultural schools in Albania. The region described with greatest detail is western Albania between Valona and Durazzo. It is to be hoped that this investigation will be followed by a similar survey of the rest of Albanian territory.

LEON DOMINIAN

ARABU, N. **Les régions voisines de la mer de Marmara.** Map. *Ann. de Géogr.*, No. 143, Vol. 26, 1917, pp. 353-375. [Sketch of the geological history.]

EREDIA, FILIPPO. **Sul clima di Salonicco.** *Diagrs. Boll. Reale Soc. Geogr. Italiana*, Vol. 5, 1916, No. 12, pp. 980-1006. Rome.

GAUTIER, E.-F. **La pointe de Sedd-ul-Bahr.** Map, ills. *Ann. de Géogr.*, No. 132, Vol. 23-24, 1915, pp. 433-437.

HAUMANT, ÉMILE. **La pays dinarique et les types serbes, d'après Mr Jovan Cvijić.** *Ann. de Géogr.*, No. 132, Vol. 23-24, 1915, pp. 407-419. [Abstracted in the *Review*, Vol. 3, 1917, pp. 324-325.]

MAREK, RICHARD. **Südost-Europa und Vorder-Asien: Griechenland.** *Geogr. Zeitschr.*, Vol. 22, 1916, No. 9, pp. 510-527.

NICOLESKO, MIRON. **Distribution géographique du pétrole en Roumanie.** ills. *Atti X Congr. Internaz. di Geogr.*, Roma, 1913, pp. 1194-1207. Reale Società Geografica, Rome, 1915.

PREZZOLINI, GIUSEPPE. **La Dalmazia.** 75 pp. Libreria della Voce, Florence, 1915. L. 1. 10 x 7.

RECHINGER, KARL. **Korfu.** 18 pp.; ills. (Vegetationsbilder, Ser. 12, No. 4. Herausgegeben von G. Karsten und H. Schenck.) Gustav Fischer, Jena, 1914.

TÄUBER, C. **Meine Durchquerung der nordalbanischen Alpen im April 1914.** ills. *Jahrbuch des Schweizer Alpenclub*, Vol. 50, 1914 and 1915, pp. 3-29. Bern, 1916.

WEISS, J. **Zur Verkehrsgeographie Serbiens.** Map, ills. *Österreichische Monats-schr. für den Orient* (herausgegeben von K. K. österreichischen Handelsmuseum in Wien), Vol. 41, 1915, No. 9-12, pp. 274-276.

WOODS, H. C. **The Salonika campaign.** *Scottish Geogr. Mag.*, Vol. 33, 1917, No. 2, pp. 65-73.

AFRICA

SUDAN AND UPPER GUINEA

BRUEL, GEORGES. **Bibliographie de l'Afrique Équatoriale Française.** iv and 326 pp.; index. Gouvernement Général de l'Afrique Équatoriale Française. Emile Larose, Paris, 1914. 10s. 10 x 6½.

M. Bruel is Chief Administrator of the colonies. This list of 7029 titles, classified by author and by periodicals (anonymous articles), covers the whole of French Africa south of the Sahara. Even a newspaper paragraph of a few lines is listed if it contains a date or other bit of information not found elsewhere. France has had a great number of official and volunteer investigators in the field; and this important work will give to students of French Equatorial Africa the same great service that Grandidier's "Bibliography of Madagascar" renders to students of that island.

CYRUS C. ADAMS

RAPHAEL, J. R. **Through unknown Nigeria.** xix and 361 pp.; ills., index. T. Werner Laurie, Ltd., London, [1914?] 8s. 6d. 9 x 6.

The title is somewhat misleading, for Barth was a standard authority on large areas of Nigeria a half century ago, and six or seven excellent books have appeared within the past twelve years, all dealing with one or another area that Raphael describes. The book gives many accurate impressions of the land, its peoples, and activities. The author has almost nothing to say about the production of cotton—an economic question of great interest in England.

There are frequent references to the Fulani and the Hausa peoples. The term Fula is preferable to Fulani, as the latter is merely the Hausa variant of the name. But every allusion to these peoples is merely incidental. The average reader gets no con-

ception of the fact that they are two of the most conspicuous races of Africa, very unlike each other, but both remarkable in their characteristics and history.

The author shows that the policy of Goldie and Lugard, in dealing with the Hausa and Fula population, is the guiding principle of the government today. The aim is to encourage and foster all that is good in the native life and to suppress only slave-raiding and other evil practices which retard development.

An extended account is given of Kano, the famous city of central Sudan and the focus of the whole Mohammedan population. The policy of the British, in that city and in all the provinces tributary to it, is to rule by and through the natives, leaving them to select their own emirs, who must, however, be approved by the British governor. The control of this enormous and intensely fanatical part of the population was a delicate problem, but the English have solved it, as is proved by the apparently complete acquiescence of the Mohammedans.

Kano is surrounded by a wall of dried mud, as hard as rock, eleven miles long, fifty feet high and forty feet wide at the base. The population of 30,000 has room in this enclosure for many fields and pastures. The mud houses are comfortable; even Europeans live in them, and the cheapest rent for a few dollars a year. The Kano market, famous throughout Africa, is the collecting and distributing point for trade between the central Sudan and the Mediterranean. The crowds at the market, on the busiest days, number from 10,000 to 12,000.

The chief Niger port has long been Forcados, at the mouth of one of the delta streams. It is greatly to the advantage of the Niger ocean trade that a new port has recently been built at Burutu, four miles up stream from Forcados, where two ocean vessels at a time may take on or discharge freight.

CYRUS C. ADAMS

THIEROLF, HANS. *Neunzig Jahre Tschadsee-Forschung: Versuch einer historischen Darstellung des Tschadseebildes*. 81 pp.; maps, diagrs., bibliogr. Dissertation Universität Giessen, 1914. 9 x 5½.

A summary of the history and results of Lake Chad exploration from Denham (1823) to Tilho (1912-13). The reports and other publications on which the monograph is based include 43 titles. Summing up the scientific results, Dr. Thierolf says that the area of the lake has considerably diminished within the 90 years of observations, though the differing determinations of its size are undoubtedly due, in part, to the fact that some explorers have seen the lake at periods of comparatively small, and others at periods of unusually large precipitation. The long duration of the *harmattan* especially induces high evaporation. There is no reason to believe that the lake will disappear.

According to Tilho, the highest level of the lake is in December and the lowest in August, the difference between them being four-fifths of a meter. The channels in the lagoon regions, Tilho says, have an average depth of 2½ to 3 meters, but the mean depth in free water is less. Explorers have differed widely as to the "taste" of Chad's waters. Barth and Nachtigal both declared the water to be sweet; Dubois and Lenfant said it was sweet only at high water. Tilho says the water is brackish and its salinity increases with the distance from the mouths of tributary streams.

Nachtigal said that about 100 inhabited islands are strewn over a third of the lake's area. D'Huart found that all the islands have the same general direction from north-northwest to south-southeast and attributed this fact to the influence of the *harmattan* and of the current in the lake caused by the entering waters of the Shari River. He also distinguished three groups of islands: those that are inhabited and rise from 10 to 15 meters above lake level, those that are 4 to 5 meters high and are used as meadows, and the low islands that are only half a meter or less above the lake's surface.

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PHYSICAL GEOGRAPHY

GEOLOGY AND GEOMORPHOLOGY

WOLFF, FERDINAND VON. **Der Vulkanismus. 1. Band: Allgemeiner Teil. 1. Hälfte: Das Magma und sein geologischer Gestaltungsvorgang. Die vulkanischen Erscheinungen der Tiefe. Der submarine Vulkanismus.** viii and 300 pp. 2. Hälfte: Die vulkanischen Erscheinungen der Oberfläche. Lunarer und kosmischer Vulkanismus. Geschichte der Vulkanologie. pp. 301-711. Maps, ills. F. Enke, Stuttgart, 1913 and 1914. 10 x 6½.

These are the first and second parts of the first volume—one-half of the whole work when completed—of a modern scientific handbook on vulcanism, working up the latest researches of Rosenbusch, Van Hise, Brögger, Daly, Becke, and many others. The first volume explains the volcanic phenomena by the physical conditions under which they occur. The petrographical, physical, and chemical problems involved in volcanic processes receive special attention. Careful examination of these problems seems to prove that the direct causes of the eruptions are variations of pressure and temperature which disturb the chemical equilibrium of the magma. The author also discusses at some length the differences of the Atlantic and Pacific types of the magma. The former surrounds the Atlantic Ocean and forms the volcanic rocks of almost all the continents, and the oceanic islands; the latter surrounds the Pacific Ocean and forms also the volcanic rocks of the three Mediterranean regions.

In the oldest geological times the Pacific magmas dominated. The first Atlantic rocks are not discernible until the Silurian, and they do not noticeably increase before the end of the Palaeozoic era. Their domination begins in the Tertiary. It seems then that a gradual change of the chemical composition of the magma accompanies the geological history of the earth.

The submarine manifestations of vulcanism seem to be much more intense than those on the land. The existing volcanoes on the land continue to use craters of Quaternary or Tertiary origin, but on the floor of the oceans new ones are formed even in the geological present. Their connection with the magma is much more direct than that of the surface volcanoes, the temperature of those lavas which reach the surface (Hawaii, Samoa) having been found considerably higher than that of the land volcanoes.

The larger part of the second half of the first volume is devoted to the problems of surface vulcanism, followed by chapters on cosmic vulcanism and the history of vulcanology. The author distinguishes three classes of surface eruptions: linear, areal, and central. The last type, the most frequent in the geological present, is the one commonly understood by the word volcano. It may be an elevation or a depression (Hawaii). The three classes evidently correspond to three degrees of intensity of the volcanic forces, the areal eruptions being the strongest, the central the weakest type. In a normal

volcanic cycle the three succeed each other chronologically, as may be observed in the volcanic regions of Iceland, Ireland, and Scotland. In intrusive rocks, the neck represents the central, the dike the linear, the batholith and laccolith the areal, intrusion.

The author describes the phenomena and products of the different classes of eruptions, with many examples from all parts of the world, placing especial emphasis on the physical and chemical sides of the processes.

Considering the dominating part which the process of cooling of liquid silicates plays in all kinds of volcanic activity, vulcanism cannot be an exclusively terrestrial phenomenon, but must occur wherever in the universe magma passes from the hot liquid into the crystallized state, allowing such alterations as correspond to the different physical conditions of the respective celestial bodies.

The magma of the moon cannot be very different from that of the earth, because the average density of the two is approximately the same. But all the phenomena dependent on pressure and tension must show certain differences. On the moon the highest degree of contraction was on the actual surface, which, contracting more rapidly than the lower portions, suffered the great breaks whose effects are seen in the enormous faults and fissures which characterize the relief of the moon as well as the absence of folded mountains. Likewise the crust of the moon, not re-enforced by sedimentary masses, offered less resistance than the earth to the attack of the volcanic forces from within. Volcanic action on the moon could therefore be one single huge process which continued with decreasing intensity until it had exhausted itself, while on the earth there were repeated periods of volcanic action corresponding to periods of disturbances of the crust and of varying, though on the whole also decreasing, intensity.

It would not do, therefore, to consider the present state of the moon as an example of the probable future condition of the earth, because here the endogenous forces are opposed by the exogenous, and the latter must finally be victorious, reducing the topography to the peneplane stage which will never be reached on the moon on account of its lack of water and atmosphere.

The author has succeeded in presenting the extremely difficult matter in a lucid and unpretentious style intelligible to any student with the necessary preparatory knowledge, while the bibliographical references represent a small international library of modern vulcanology.

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